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[illegible] 2017—2025 [illegible] · 8 [illegible] · [illegible]

[illegible] [illegible] 70—90 [illegible]“[illegible]”[illegible]

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[illegible]2024—2025 [illegible]

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2017·20	S [illegible]	[illegible]	[illegible]
2018·20	[illegible]—[illegible]—[illegible]	[illegible]	[illegible]
2018·23	[illegible]	[illegible]	[illegible] U-x [illegible]
2019·20	[illegible]	[illegible]	[illegible]
2020·22	[illegible]	[illegible]	[illegible]
2021·20	[illegible]—[illegible]—[illegible]	[illegible]	[illegible]
2021·22	[illegible]	[illegible]	[illegible]
2022·21	[illegible]	[illegible]v-t [illegible]	[illegible]
2023·22	[illegible]	[illegible]	[illegible]
2024·12/13	[illegible]	[illegible]/[illegible]	[illegible]
2025·10/13	[illegible]	[illegible]	[illegible]

1. [illegible]“[illegible]”

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2. [illegible]

1. [illegible]
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3. [illegible]
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□1□□□□□ C □□□□□□□□□□□

□2□□□□□ P □ B □□□□□□ x □ L □□□□□□□□ L □□□□□□

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□□□□ $m=1.00\times10^3$ kg □□□□□□□□□□□□□□□□□□□□□ $r_1=20$ m□$r_2=45$ m□□□□□□□□□□□□□□□□□□□ □ 0.50 □□□□□□□□□□□ 100 m□□□□□□□□□□□ 8.0 m□

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□2□□□□ v_1 □□□□□□□□□□□□ 40 kW □□□□□□ 5.0 s□□□ v_2 □□□□□□□□□□□□□□□□□□□

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□□ $m=0.50$ kg □□□□□ 8.0 m/s □□□□□□ 4.0 m□□□□ 2.0 m/s □□□□□□□□□□□□□□□□□□□□□ $\mu=0.25$□□□□□□□□□ $R=0.40$ m □□□□□□□□□□□□□□□□□□□

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□3□□ B→C □□□□□□□□□□□□□□□□□□□□□□□□□ $U=3nRT/2$□

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□□□□□□□□□□□ $S=0.2\ \ 40\ m^2$□□□ $R=0.600\ \Omega$□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ $\beta=0.500$ T/s □□□□□□□□□□□□□□ $B=0.400$ T□□□□□□□□□□□□□□□□□□ ω □□□□□

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□□ $M=2.0$ kg□□□ $l=0.50$ m□□□ $R=0.50\ \Omega$ □□□ $B=1.0$ T □□□□□□□□□□□□ $v_0=10$ m/s□□□□□□□□□□□□ $I=60$ A□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

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□□□□□□□□□□□□□□□□□□□□□□ $E_0=2.00\times10^4$ V/m□□□□□□ $B_0=0.200$ T□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ $B_1=0.500$ T □□□□□□□□□□□ $r=0.200$ m □□□□□□□□□□□□□□□□□□□□□ $d=0.100$ m □□□□□□□□□□□ $E_1=3.00\times10^4$ V/m□□□□□□□□□□□□□ $D=0.200$ m □□□□

□1□□□□□□□□□□□□□ q/m□

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□1□□□□□ $H=gt^2/2$□□ $t=\sqrt{2H/g}=\sqrt{6.4/10}=0.800$ s□

□2□□ B □ C□$v_C^2=v_B^2-2\mu gL=36-5L$□□ $x=L+v_C t=L+0.800\sqrt{36-5L}$□□□□□□□□□ C□$0\le L\le 7.20$ m□

□3□□ $y=\sqrt{36-5L}$□□ $L=(36-y^2)/5$□$x=(36-y^2)/5+0.8y$□□□□□□□ $y=2.00$ m/s□□ $v_C=2.00$ m/s□$L=(36-4)/5=6.40$ m□$x_{max}=6.40+2.00\times0.800=8.00$ m□

□ 2 □□□

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□1□$\mu mg=mv^2/r$□□ $v=\sqrt{\mu gr}$□□□ $v_1=\sqrt{0.5\times10\times20}=10.0$ m/s□$v_2=\sqrt{0.5\times10\times45}=15.0$ m/s□

□2□□□□□□ $W_P=Pt=40\,000\times5.0=2.00\times10^5$ J□□□□□□ $\Delta E=\frac{1}{2}m(v_2^2-v_1^2)+mgh=6.25\times10^4+8.00\times10^4=1.425\times10^5$ J□□ $W_P+W_□=\Delta E$□□ $W_□=-5.75\times10^4$ J□

□3□□□□□□$W_□=-fs$□□ $f=5.75\times10^4/100=575$ N□

□ 3 □□□

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□1□□□□□□□□□□□□□□□□□□□□□□□□□□□ $a=\mu g=2.50$ m/s²□□□□ 2.0 m/s□□□□□ $s=(8^2-2^2)/(2\times2.5)=12$ m>4.0 m□□□□□□□□□□□□□□□□□□ $v=\sqrt{8^2-2\times2.5\times4}=\sqrt{44}=6.63$ m/s□

□2□□□□□□□□□□□□□□□□□$\frac{1}{2}mv^2=\frac{1}{2}mv_□^2+mg(2R)$□□ $v_□^2=44-4gR=44-16=28$□$v_□=5.29$ m/s□

□3□□□□□□□□□□□□□□□$mg+F_N=mv_□^2/R$□□ $F_N=m(v_□^2/R-g)=0.50\times(28/0.40-10)=30.0$ N□□□□□□□□□

□ 4 □□□

□□□□ A→B □□□pV □□□□□□□□B→C □□□p/T □□□□□□□□□□□□

□1□$pB=pAVA/VB=1.00\times10^{5}\times600/400=1.50\times10^{5}$ Pa□$pC=1.50pB=2.25\times10^{5}$ Pa□□□□ $TC/TB=pC/pB=1.50$□□ $TC=450$ K□

□2□□□□□□□□□□□□□□□□ W □$=pAVA\ln(VA/VB)$□$pAVA=1.00\times10^{5}\times600\times10^{-6}=60.0$ J□□ W □$=60.0\ln1.5=24.3$ J□

□3□□ $nR=pAVA/TA=60.0/300=0.200$ J/K□B→C □□□W □$=0$□$Q=\Delta U=3nR(TC-TB)/2=1.5\times0.200\times150=45.0$ J□

□ 5 □□□

□□□□ □□□□□ $\varepsilon=S\cdot dB/dt$□□□□□□□□□□□□□□□□□□□□□□□□

□1□$\varepsilon_0=S\beta=0.240\times0.500=0.120$ V□$P_0=\varepsilon_0^2/R=0.0240$ W□

□2□□□□ $\varepsilon=BS\omega\sin\omega t$□$\varepsilon m=BS\omega$□□□□□ $P=\varepsilon m^2/(2R)=B^2S^2\omega^2/(2R)$□□ $P=4P_0=0.0960$ W□□ $\omega=\sqrt{[2RP/(B^2S^2)]}=3.54$ rad/s□

□3□□□□□□ $\tau=ISB\sin\omega t$□□□ $I=BS\omega\sin\omega t/R$□□□ $\tau=(B^2S^2\omega/R)\sin^2\omega t$□□□□ $\tau max=B^2S^2\omega/R=0.0543$ N·m□□□□□□□□□□□□

□ 6 □□□

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□1□□□□ $F=BIl=1.0\times60\times0.50=30$ N□□□□□□□□□□$a=(Mg-F)/M=(20-30)/2=-5.0$ m/s²□□□□□ $t0=v0/5=2.00$ s□□□□□ $L=v0t0+at0^2/2=10.0$ m□

□2□$v(t)=10-5t$□$0\le t\le2$ s□□□□□□□ $E=Blv=0.50(10-5t)=5.00-2.50t$ V□□□□□□□□□□□□□□□□□□□□□ □ $U+E=IR$□$U(t)=30-(5-2.5t)=25.0+2.50t$ V□

□3□□□□□□□ $WA=\int UIdt=I[IRt0-BlL]=60[0.5\times60\times2-1\times0.5\times10]=3.30\times10^{3}$ J□□□□□□□□ 3300 J□□□□□□□□□ $\frac{1}{2}Mv0^2+MgL=100+200=300$ J□□□□□□□ $I^2Rt0=3600$ J□

□ 7 □□□

□□□□ □□□□□□ $v=E/B$□□□□□□ $qvB=mv^2/r$□□□□□□□□□□□□

□1□$v=E_0/B_0=2.00\times10^{4}/0.200=1.00\times10^{5}$ m/s□□ $qvB_1=mv^2/r$□$q/m=v/(B_1r)=1.00\times10^{6}$ C/kg□

□2□□□□□□ $ay=(q/m)E_1=3.00\times10^{10}$ m/s²□□□□□ $t_1=d/v=1.00\times10^{-6}$ s□□□□□ $y_1=ayt_1^2/2=0.0150$ m□

□3□□□□□□□ $vy=ayt_1=3.00\times10^{4}$ m/s□□□□□ $t_2=D/v=2.00\times10^{-6}$ s□□□□□ $y_2=vyt_2=0.0600$ m□□□□ $y=y_1+y_2=0.0750$ m□

□ 8 □□□

□□□□ □□□□□□□□□ $U=E-rI$□U-I □□□□□□□ E□□□□□□□ r□

□1□□□□□□□□□□ $k=(0.96-1.39)/(0.50-0.10)=-1.075$ V/A□□ $r\approx1.08$ Ω□$E=U+rI$□□□□□□□□ 1.50 V□□□□□□□ $E\approx1.50$ V□$r\approx1.07$ Ω□

□2□□□□□□□□□□□ R □$=r$□□□ R □≈1.07 Ω□

□3□$P_{max}=E^2/(4r)\approx1.50^2/(4\times1.07)=0.526$ W□□□□□□□□□ $U=E-rI$□□□ E□r □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

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[illegible]**“**[illegible]**”**[illegible]

[illegible] 2017—2025 [illegible]/[illegible]